

Patent Application of Robert D. Gourlay
for "Inhalation Detector" continued
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ABSTRACT

A detector providing an electrical signal in response to the pressures encountered in sensing breath inhalation in respirators. The detector uses a capacitive pressure sensor formed by a flexible conductive diaphragm separated from fixed electrodes by a layer of dielectric film. Deflection of the diaphragm by pressure introduces a low permittivity space in the sensor resulting in a substantial change in capacitance. The change in capacitance modifies the frequency of an oscillator. A frequency responsive circuit provides balancing electrostatic force feedback voltage to the diaphragm. The force feedback stiffens the diaphragm and maintains it in a high capacitance, high sensitivity state. This feedback reduces sensitivity to changes in the diaphragm mechanical properties. Signal filtering reduces the effects of long term drift and environmental factors.